

PTO/SB/08a (08-03)  
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Substitute for form 1449A/PTO		<b>Complete If Known</b>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (use as many sheets as necessary)		Application Number	10/849,347
		Filing Date	May 19, 2004
		First Named Inventor	Robert H. Burgener, II
		Group Art Unit	2822
		Examiner Name	Kevin M. Picardat
		Attorney Docket Number	3398.2.8
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U.S. PATENT DOCUMENTS					
Examiner Initials *	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number - Kind Code <sup>2</sup> (if known)			
KP	U1	US-6,838,308 B2	01/2005	Haga, Koichi	
KP	U2	US-6,707,074 B2	03/2004	Yoshii et al.	
KP	U3	US-5,331,655 A	07/1994	Harder et al.	
KP	U4	US-3,864,725	02/1975	Merrin, Seymour	
	U5				
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	U13				
	U14				

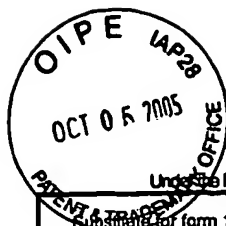
FOREIGN PATENT DOCUMENTS						
Examiner Initials *	Cite No. <sup>1</sup>	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
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### NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
KP	O1	AULBUR, W.; Density Functional Theory: Basic Ideas & Applications; Ohio State University.	
KP	O2	LOOK, D.C., and CLAFLIN, B.; P-type doping and devices based on ZnO; 08/2003; Wiley-VCH Verlag GmbH & Co.	
KP	O3	ZUNGER, A.; Practical Doping Principles; NCPV and Solar Program Review Meeting 2003; pp. 831-835.	
KP	O4	ZHANG, S.B., WEI, S.H., and ZUNGER, A.; Intrinsic n-type versus p-type doping asymmetry and the defect physics of ZnO; Physical Review B; 01/31/2001; pp. 075205-1 - 075205-7; Volume 63; The American Physical Society.	
KP	O5	LIMPIJUMNONG, S., ZHANG, S.B., WEI, S.H., and PARK C.H.; Doping by Large-Size-Mismatched Impurities: The Microscopic Origin of Arsenic- or Antimony-Doped p-Type Zinc Oxide; Physical Review Letters; 04/16/2004; Volume 92, Number 15; The American Physical Society.	
KP	O6	YAMAMOTO, T., and KATAYAMA-YOSHIDA, H.; Solution Using a Codoping Method to Unipolarity for the Fabrication of p-Type ZnO; Japanese Journal of Applied Physics; 02/15/1999; pp. L 166-L 169; Volume 38; Japanese Journal of Applied Physics Publication Board.	
KP	O7	PARK, C.H., ZHANG, S.B., and WEI, S.H.; Origin of p-type doping difficulty in ZnO: The impurity perspective; Physical Review B; 08/05/2002; pp. 073202-1 - 073202-3; Volume 66; The American Physical Society.	
KP	O8	TSUKAZAKI, A., ATSUSHI, T., OHTOMO, A., ONUMA, T., OHTANI, M., MAKINO, T., et al; Repeated temperature modulation epitaxy for p-type doping and light-emitting diode based on ZnO; Nature Materials; 01/2005; pp. 42-46; Volume 4; Nature Publishing Group.	
KP	O9	NONAKA, M., MATSUSHIMA, S., MIZUNO, M., and KOBAYASHI, K.; Electronic Structure of Group III Elements Dopes into ZnO by Using Molecular Orbital Calculation; Chemistry Letters 2002; 02/20/2002; pp. 580-581; The Chemical Society of Japan.	
KP	O10	WANG, L.G., and ZUNGER, A.; Cluster-Doping Approach for Wide-Gap Semiconductors: The Case of p-type ZnO; Physical Review Letters; 06/27/2003; pp. 256401-1 - 256401-4; Volume 90, Number 25; The American Physical Society.	
KP	O11	NORTON, D.P., HEO, Y.W., IVILL, M.P., IP, K., PEARTON, S.J., et al; ZnO: growth, doping and processing; Materials today; 06/2004; Elsevier Ltd.	
KP	O12	LEE, E.-C., KIM, Y.-S., JIN, Y.-G., and CHANG, K.J.; First-Principles Study of p-Type Doping and Codoping in ZnO; Journal of the Korean Physical Society; 12/2001; pp. S23-S26; Volume 39.	
KP	O13	MORHAÏN, C., TEISSEIRE, M., VEZIAN, S., VIGUE, F., RAYMOND, F., et al; Spectroscopy of Excitons, Bound Excitons and Impurities in h-ZnO Epilayers; 09/30/2001; pp. 881-885; Volume 229, Number 2; Wiley VCH; Berlin.	
KP	O14	BANDYOPADHYAY, S., PAUL, G.K., ROY, R., SEN, S.K., and SEN, S.; Study of structural and electrical properties of grain-boundary modified ZnO films prepared by sol-gel technique; Materials Chemistry and Physics; 05/17/2001; pp. 83-91; Volume 74; Elsevier Science B.V.	

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Substitute for form 1449B/PTO  <h2 style="text-align: center;">INFORMATION DISCLOSURE STATEMENT BY APPLICANT</h2> <p style="text-align: center;">(use as many sheets as necessary)</p> <p>Sheet      2              Of              9</p>		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: center;">Complete If Known</th> </tr> <tr> <td style="width: 40%;">Application Number</td> <td>10/849,347</td> </tr> <tr> <td>Filing Date</td> <td>May 19, 2004</td> </tr> <tr> <td>First Named Inventor</td> <td>Robert H. Burgener, II</td> </tr> <tr> <td>Group Art Unit</td> <td>2822</td> </tr> <tr> <td>Examiner Name</td> <td>Kevin M. Picardat</td> </tr> <tr> <td>Attorney Docket Number</td> <td>3398.2.8</td> </tr> </table>		Complete If Known		Application Number	10/849,347	Filing Date	May 19, 2004	First Named Inventor	Robert H. Burgener, II	Group Art Unit	2822	Examiner Name	Kevin M. Picardat	Attorney Docket Number	3398.2.8
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KP	O15	WILKINSON, J., XIONG, G., UCER, K.B., and WILLIAMS, R.T.; Lifetime and Oscillator Strength of Excitonic Luminescence in Zinc Oxide; Department of Physics, Wake Forest University, Winston-Salem, NC.	
KP	O16	KOBAYASHI, A., SANKEY, O.F., and DOW, J.D.; Deep energy levels of defects in the wurtzite semiconductors AlN, CdS, CdSe, and ZnO; Physical Review B; 07/15/1983; pp. 946-956; Volume 28, Number 2; The American Physical Society.	
KP	O17	DANEU, N., REENIK, A., and BERNIK, S.; Grain Growth Control in Sb <sub>2</sub> O <sub>3</sub> -Doped Zinc Oxide; Journal of the American Ceramic Society; 2003; pp. 1379-1384; Volume 86, Number 8.	
KP	O18	OHYAMA, M.; Sol-Gel Preparation of Transparent and Conductive Aluminum-Doped Zinc Oxide Films with Highly Preferential Crystal Orientation; Journal of the American Ceramic Society; 1998; pp. 1622-1632; Volume 81, Number 6.	
KP	O19	DUAN, X.L., YUAN, D.R., CHENG, X.F., SUN, H.Q., SUN, Z.H., et al; Microstructure and Properties of Co <sup>2+</sup> ZnAl <sub>2</sub> O <sub>4</sub> /SiO <sub>2</sub> Nanocomposite Glasses Prepared by Sol-Gel Method; Journal of the American Ceramic Society; 2005; pp. 399-403; Volume 88, Number 2.	
KP	O20	SOHN, K.S., HWANG, D.K., and MYOUNG, J.M.; Time Integrated/Resolved Photoluminescence of ZnO Films Deposited on Sapphire and GaAs; Japanese Journal of Applied Physics; 12/2003; pp. 7376-7378; The Japan Society of Applied Physics.	
KP	O21	SUN, X.W.; Optical properties of epitaxially grown zinc oxide films on sapphire by pulsed laser deposition; Journal of Applied Physics; 07/01/1999; pp. 408-411; Volume 86, Number 1; American Institute of Physics.	
KP	O22	BURDEN, A.P., BISHOP, H.E., BRIERLEY, M., FRIDAY, J.M., HOOD, C., et al.; Incorporating consumer-priced field emitting inks into arrays of triode devices; Solid State Electronics; 2001; pp. 987-996; Vol. 45; Printable Field Emitters Ltd.	
KP	O23	MINAMI, T., MIYATA, T., SHIRAI, T., and NAKATANI, T.; Electroluminescent Oxide Phosphor Thin Films Prepared by a Sol-gel Process; Mat. Res. Soc. Symp. Proc.; 2000; pp. Q4.3.1 - Q4.3.6; Vol. 621; Materials Research Society.	
KP	O24	QIU, C., CHEN, H., WONG, M., and KWOK, H.S.; Dependence of the Current and Power Efficiencies of Organic Light-Emitting Diode on the Thickness of the Constituent Organic Layers; IEEE Transactions On Electron Devices; 09/2001; pp. 2131-2137; Vol. 48; IEEE.	
KP	O25	MATSUDA, T., KAWABE, M., IWATA, H., and OHZONE, T.; Visible Electroluminescence from MOS Capacitors with Si-implanted SiO <sub>2</sub> ; IEICE Trans. Electron.; 09/11/2002; pp. 1895-1904; Vol. E85-C, No. 11.	
KP	O26	ONG, H.C., LI, A.S.K., and DU, G.T.; Depth profiling of ZnO thin films by cathodoluminescence; Applied Physics Letters; 04/30/2001; pp. 2667-2669; Vol. 78, No. 18; American Institute of Physics.	
KP	O27	WASHINGTON, P.L., ONG, H.C., DAI, J.Y., and CHANG, R.P.H.; Determination of the optical constants of zinc oxide thin films by spectroscopic ellipsometry; Applied Physics Letter; 06/22/1998; pp. 3261-3263; Vol. 72, No. 25; American Institute of Physics.	
KP	O28	SEKIGUCHI, T., OHASHI, N., and YAMANE, H.; Cathodoluminescence Study on ZnO and GaN; Solid State Phenomena; 1998; pp. 171-182; Vols. 63-64; Scitec Publications; Switzerland.	
KP	O29	KOUYATE, D., RONFARD-HARET, J.-C., and KOSSANYI, J.; Photo- and electro-luminescence of rare earth-doped semiconducting zinc oxide electrodes: Emission from both the dopant and the support; Journal of Luminescence; 1991; pp. 205-210; Vol. 50; Elsevier Science Publishers B.V.	

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Sheet	3	Of	9

KP	O30	KOSSANYI, J., KOUYATE, D., POULIQUEN, J., RONFARD-HARET, J.C., VALAT, P., et al.; Photoluminescence of Semiconducting Zinc Oxide Containing Rare Earth Ions as Impurities; Journal of Luminescence; 1990; pp. 17-24; Vol. 46; Elsevier Science Publishers B.V. (north-Holland).	
KP	O31	WANG, Y.G., LAU, S.P., LEE, H.W., YU, S.F., TAY, B.K., et al.; Photoluminescence study of ZnO films prepared by thermal oxidation of Zn metallic films in air; Journal of Applied Physics; 07/01/2003; pp. 354-358; Vol 94, No. 1; American Institute of Physics.	
KP	O32	YU, S.F., YUEN, C., LAU, S.P., WANG, Y.G., LEE, H.W., et al.; Ultraviolet amplified spontaneous emission from zinc oxide ridge waveguides on silicon substrate; Applied Physics Letter; 11/24/2003; pp. 4288-4290; Vol. 83, No. 21; American Institute of Physics.	
KP	O33	XIONG, G., WILKINSON, J., LYLES, J., UCER, K.B., and WILLIAMS, R.T.; Luminescence and stimulated emission in zinc oxide nanoparticles, films, and crystals.	
KP	O34	ONG, H.C., DAI, J.Y., and DU, G.T.; Studies of electronic structure of ZnO grain boundary and its proximity by using spatially resolved electron energy loss spectroscopy; Applied Physics Letter; 07/08/2002; pp. 277-279; Vol. 81, No. 2; American Institute of Physics.	
KP	O35	AGNE, T., GUAN, Z., LI, X.M., WOLF, H., and WICHERT, T.; Incorporation of the Donor Indium in Nanocrystalline ZnO; phys. stat. sol.; 2002; pp. 819-823; Vol. 229; WILEY-VCH Verlag Berlin GmbH; Berlin.	
KP	O36	QADRI, S.B., KIM, H., HORWITZ, J.S., and CHRISEY, D.B.; Transparent conducting films of ZnO-ZrO <sub>2</sub> : Structure and properties; Journal of Applied Physics; 12/01/2000; pp. 6564-6566; Vol. 88, No. 11; American Institute of Physics.	
KP	O37	HAN, J., MANTAS, P.Q., and SENOS, A.M.R.; Grain growth in Mn-doped ZnO; Journal of the European Ceramic Society; 2000; 2753-2758; Vol. 20.	
KP	O38	JIN, Y., ZHANG, B., YANG, S., WANG, Y., CHEN, J., et al.; Room temperature UV emission of Mg <sub>1-x</sub> Zn <sub>x</sub> O films; Solid State Communications; 2001; pp. 409-413; Vol. 119; Elsevier Science Ltd.	
KP	O39	PETRIK, N.G., ALEXANDROV, A.B., and VALL, A.I.; Interfacial Energy Transfer during Gamma Radiolysis of Water on the Surface of ZrO <sub>2</sub> and Some Other Oxides; J. Phys. Chem. B; 2001; pp. 5935-5944; Vol. 105; American Chemical Society.	
KP	O40	COUNIO, G., ESNOUF, S., GACON, T., and BOILLOT, J.-P.; CdS:Mn Nanocrystals in Transparent Xerogel Matrices: Synthesis and Luminescence Properties; J. Phys. Chem.; 1996; pp. 20021-20026; Vol. 100; American Chemical Society.	
KP	O41	STRAVREV, K., KYNEV, K., ST. NIKOLOV, G., and DYAKOVITCH, V.A.; Semiempirical Assignment of the Electron Transitions in Manganese(II)-Doped II-VI Compounds; J. Phys. Chem. Solids; 1987; pp. 841-844; Vol. 48, No. 9; Pergamon Journals Ltd.	
KP	O42	FALCONY, C., ORTIZ, A., DOMINGUEZ, J.M., FARIAS, M.H., COTA-ARAIZA, L. et al.; Luminescent Characteristics of Tb Doped Al <sub>2</sub> O <sub>3</sub> Films Deposited by Spray Pyrolysis; J. Electrochem Soc.; 01/1992; pp. 267-271; Vol. 139, No. 1; The Electrochemical Society, Inc.	
KP	O43	BACHIR, S., KOSSANYI, J., SANDOJLY, C., VALAT, P., and RONFARD-HARET, J.C.; Electroluminescence of Dy <sup>3+</sup> and Sm <sup>3+</sup> Ions in Polycrystalline Semiconducting Zinc Oxide; J. Phys. Chem.; 1995; pp. 5674-5679; Vol. 99; American Chemical Society.	
KP	O44	BACHIR, S., KOSSANYI, J., and RONFARD-HARET, J.C.; Electroluminescence of Ho <sup>3+</sup> Ions in a ZnO Varistor-Type Structure; Solid State Communications; 1993; pp. 859-863; Vol. 89, No. 10; Elsevier Science Ltd.; Great Britain.	
KP	O45	CHAKRABARTI, S., GANGULI, D., CHAUDHURI, S., and PAL, A.K.; Crystalline magnesium oxide films on soda lime glass by sol-gel processing; Materials Letters; 05/2002; pp. 120-123; Vol. 54; Elsevier Science B.V.	
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KP	O46	ARKLES, B.; Commercial Applications of Sol-Gel-Derived Hybrid Materials; MRS Bulletin; 05/2001; pp. 402-407.	
KP	O47	MURRAY, C.E., NOYAN, I.C., and MOONEY, P.M.; Mapping of strain fields about thin film structures using x-ray microdiffraction; Applied Physics Letters; 11/17/2003; pp. 4163-4165; Vol. 83, No. 20; American Institute of Physics.	
KP	O48	MODENA, S., SORARU, G.D., BLUM, Y., and RAJ, R.; Passive Oxidation of an Effluent System: The Case of Polymer-Derived SiCO; Journal of the American Ceramic Society; 2005; pp. 339-345; Vol. 88.	
KP	O49	NOYAN, I.C., WANG, P.-C., KALDOR, S.K., and JORDAN-SWEET, J.L.; Deformation field in single-crystal fields semiconductor substrates caused by metallization features; Applied Physics Letters; 04/19/1999; pp. 2352-2354; Vol. 74, No. 16; American Institute of Physics.	
KP	O50	NOYAN, I.C., JORDAN-SWEET, J., LINIGER, E.G., and KALDOR, S.K.; Characterization of substrate-thin-film interfaces with x-ray microdiffraction; Applied Physics Letters; 06/22/1998; pp. 3338-3340; Vol. 72, No. 25; American Institute of Physics.	
KP	O51	TULLER, H.L.; ZnO Grain Boundaries: Electrical Activity and Diffusion; Journal of Electroceramics; 1999; pp. 33-40; Vol. 4:S1; Kluwer Academic Publishers; Boston.	
KP	O52	WESTIN, G., EKSTRAND, A., NYGREN, M., OSTERLUND, R., and MERKELBACH, P.; Preparation of ZnO-based Varistors by the Sol-Gel Technique; J. Mater. Chem.; 1994; pp. 615-621; Vol. 4.	
KP	O53	WANG, M., YANG, X., and WANG, F.; Properties of Sensitive Materials Mainly Composed of ZnO; J. Mater. Sci. Technol.; 2000; p. 204; Vol. 16, No. 2.	
KP	O54	BAPTISTA, J.L., and MANTAS, P.Q.; High Temperature Characterization of Electrical Barriers in ZnO Varistors; Journal of Electroceramics; 2000; pp. 215-224; Vol. 4:1; Kluwer Academic Publishers; The Netherlands.	
KP	O55	BRANKOVIC, Z., BRANKOVIC, G., POLETI, D., and VARELA, J.A.; Structural and electrical properties of ZnO varistors containing different spinel phases; Ceramics International; 2001; pp. 115-122; Vol. 27; Elsevier Science Ltd. And Techna S.r.l.	
KP	O56	TANAKA, A., and MUKAE, K.; Evaluation of Single Grain Boundaries in ZnO: Rare-Earth Varistor by Micro-Electrodes; Key Engineering Materials; 1999; pp. 235-240; Vols. 157-158; Trans Tech Publications, Switzerland; CSJ Series-Publications of the Ceramic Society of Japan Vol. 1, The Ceramic Society of Japan.	
KP	O57	PANDEY, R., JAFFE, J.E., and KUNZ, A.B.; <i>Ab initio</i> band-structure calculations for alkaline-earth oxides and sulfides; Physical Review B; 04/15/1991; pp. 9228-9237; Vol. 43, No. 11; The American Physical Society.	
KP	O58	CANNEY, S.A., SASHIN, V.A., FORD, M.J., and KHEIFETS, A.S.; Electronic band structure of magnesium and magnesium oxide: experiment and theory; J. Phys. Condens. Matter; 1999; pp. 7507-7522; Vol. 11; IOP Publishing Ltd.	
KP	O59	YAMASAKI, A., and FUJIWARA, T.; Electronic structure of the MO oxides (M=Mg, Ca, Ti, V) in the GW approximation; Physical Review B; 2002; pp. 245108-1 - 245108-9; Vol. 66; The American Physical Society.	
KP	O60	MIKAJLO, E.A., SASHIN, V.A., NIXON, K.L., SEOULE DE BAS, B., DORSETT, H.E., and FORD, M.J.; Band Structures of the Group I and II Oxides: Using EMS Measurements as a Test of Theoretical Models.	
KP	O61	JOHNSON, P.D.; Some Optical Properties of MgO in the Vacuum Ultraviolet; Physical Review; 05/15/1954; pp. 845-846; Vol. 94, No. 4.	

Examiner Signature	/Kevin Picardat/	Date Considered	06/24/2006
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Substitute for form 1449B/PTO  <h2 style="text-align: center; margin: 10px 0;">INFORMATION DISCLOSURE STATEMENT BY APPLICANT</h2> <p style="text-align: center; margin: 10px 0;"><i>(use as many sheets as necessary)</i></p> <p>Sheet      5      Of      9</p>		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="2" style="text-align: center; padding: 2px;">Complete If Known</th> </tr> <tr> <td style="width: 40%; padding: 2px;">Application Number</td> <td style="padding: 2px;">10/849,347</td> </tr> <tr> <td style="padding: 2px;">Filing Date</td> <td style="padding: 2px;">May 19, 2004</td> </tr> <tr> <td style="padding: 2px;">First Named Inventor</td> <td style="padding: 2px;">Robert H. Burgener, II</td> </tr> <tr> <td style="padding: 2px;">Group Art Unit</td> <td style="padding: 2px;">2822</td> </tr> <tr> <td style="padding: 2px;">Examiner Name</td> <td style="padding: 2px;">Kevin M. Picardat</td> </tr> <tr> <td style="padding: 2px;">Attorney Docket Number</td> <td style="padding: 2px;">3398.2.8</td> </tr> </table>		Complete If Known		Application Number	10/849,347	Filing Date	May 19, 2004	First Named Inventor	Robert H. Burgener, II	Group Art Unit	2822	Examiner Name	Kevin M. Picardat	Attorney Docket Number	3398.2.8
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KP	O62	NARAZAKI, A., TANAKA, K., HIRAO, K., HASHIMOTO, T., NASU, H., et al.; IR and XPS Studies on the Surface Structure of Poled ZnO-TeO <sub>2</sub> Glasses with Second-Order Nonlinearity; Journal of the American Ceramic Society; 2001; pp. 214-217; Vol. 84.	
KP	O63	SCHONBERGER, U., and ARYASETIAWAN, F.; Bulk and surface electronic structures of MgO; Physical Review B; 09/15/1995; pp. 8788-8793; Vol. 52, No. 12; The American Physical Society.	
KP	O64	GONZALEZ, R., CHEN, Y., SEBEK, R.M., WILLIAMS, G.P., WILLIAMS, R.T., et al.; Properties of the 800-nm luminescence band in neutron-irradiated magnesium oxide crystals; Physical Review B; 03/01/1991; pp. 5228-5233; Vol. 43, No. 7; The American Physical Society.	
KP	O65	BALZER, B., HAGEMEISTER, M., KOCHER, P., and LUDWIG, J.G.; Mechanical Strength and Microstructure of Zinc Oxide Varistor Ceramics; Journal of the American Ceramic Society; 2004; pp. 1932-1938; Vol. 87.	
KP	O66	SHENG, H., EMANETOGLU, N.W., MUTHUKUMAR, S., YAKSHINSKIY, B.V., FENG, S., et al.; Ta/Au Ohmic Contacts to n-type ZnO; Journal of Electronic Materials; 2003; p. 935; Vol. 32, No. 9.	
KP	O67	SHENG, H., EMANETOGLU, N.W., MUTHUKUMAR, S., FENG, S., and LU, L.; Nonalloyed Al Ohmic Contacts to Mg <sub>2</sub> Zn <sub>12</sub> O; Journal of Electronic Materials; 2002; p. 811; Vol. 31, NO. 7.	
KP	O68	XIONG, G., WILKINSON, J., MISCHUCK, B., TU'ZEMEN, S., UCER, K.B., et al; Control of p- and n-type conductivity in sputter deposition of undoped ZnO; Applied Physics Letters; 02/18/2002; p. 1195; Vol. 80, No. 7.	
KP	O69	YAMAMOTO, T., and KATAYAMA-YOSHIDA, H.; Unipolarity of ZnO with a wide-band gap and its solution using codoping method; Journal of Crystal Growth; 2000; pp. 552-555; Vol. 214/215; Elsevier Science B.V.	
KP	O70	CHANG, R., MARKS, T., MASON, T., and POEPELMEIR, K.; n/p-Type Transparent Conductors; pp. 259-260.	
KP	O71	OLORUNYOLEMI, T., BIRNBOIM, A., CARMEL, Y., WILSON, O.C., LLOYD, I.K.; Thermal Conductivity of Zinc Oxide: From Green to Sintered State; Journal of the American Ceramic Society; 2002; pp. 1249-1253; Vol. 85.	
KP	O72	MARTIN, L.P., and ROSEN, M.; Correlation between Surface Area Reduction and Ultrasonic Velocity in Sintered Zinc Oxide Powders; Journal of the American Ceramic Society; 1997; pp. 839-846; Vol. 80.	
KP	O73	WILKINSON, J., XIONG, G., UCER, K.B., and WILLIAMS, R.T.; Lifetime and Oscillator Strength of Excitonic Luminescence in Zinc Oxide.	
KP	O74	SEKIGUCHI, T., HAGA, K., and INABA, K.; ZnO films grown under the oxygen-rich condition; Journal of Crystal Growth; 2000; pp. 68-71; Vol. 214-215; Elsevier Science B.V.	
KP	O75	VAN DE WALLE, C.G.; Hydrogen as a Cause of Doping in Zinc Oxide; Physical Review Letters; 07/31/2000; pp. 1012-1015; Vol. 85, No. 5; The American Physical Society.	
KP	O76	KATO, H., SANO, M., MIYAMOTO, K., and YAO, T.; Effect of O/Zn on Flux Ratio on Crystalline Quality of ZnO Films Grown by Plasma-Assisted Molecular Beam Epitaxy; Japanese Journal of Applied Physics; 2003; pp. 2241-2244; Vol. 42; The Japan Society of Applied Physics.	
KP	O77	NAKAHARA, K., TANABE, T., TAKASU, H., FONS, P., IWATA, K., et al.; Growth of undoped ZnO Films with Improved Electrical Properties by Radical Source Molecular Beam Epitaxy; Japanese Journal of Applied Physics; 2001; pp. 250-254; Vol. 40; The Japan Society of Applied Physics.	

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		Group Art Unit	2822
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KP	O78	WANG, X., DU, G., GU, C., JIA, J., LI, X., et al.; Two-step growth of ZnO thin films on diamond/Si low-pressure metal-organic chemical vapour deposition; J. Phys. D: Appl. Phys.; 2002; pp. L74-L76; Vol. 35; IOP Publishing Ltd., United Kingdom.	
KP	O79	HAN, J., MANTAS, P.Q., and SENOS, A.M.R.; Grain growth in Mn-doped ZnO; Journal of the European Ceramic Society; 2000; pp. 2753-2758; Vol. 20; Elsevier Science Ltd.	
KP	O80	FONS, P., IWATA, K., NIKI, S., YAMADA, A., MATSUBARA, K., et al.; Uniaxial locked growth of high-quality epitaxial ZnO films on (1 1 2 0)-Al <sub>2</sub> O <sub>3</sub> ; Journal of Crystal Growth; 2000; pp. 532-536; Vol. 209; Elsevier Science B.V.	
KP	O81	HAGA, K., KAMIDAIRA, M., KASHIWABA, Y., SEKIGUCHI, T., WATANABE, H.; ZnO thin films prepared by remote plasma-enhanced CVD method; Journal of Crystal Growth; 2000; pp. 77-80; Vol. 214/215; Elsevier Science B.V.	
KP	O82	FONS, P., IWATA, K., NIKI, S., YAMADA, A., and MATSUBARA, K.; Growth of high-quality epitaxial ZnO films on $\alpha$ -Al <sub>2</sub> O <sub>3</sub> ; Journal of Crystal Growth; 1999; pp. 627-632; Vol. 201/202; Elsevier Science B.V.	
KP	O83	MYOUNG, J.-M., YOON, W.-H., LEE, D.-H., YUN, I., BAE, S.-H., et al.; Effects of Thickness Variation of Properties of ZnO Thin Films Grown by Pulsed Laser Deposition; Japanese Journal of Applied Physics; 2002; pp. 28-31; Vol. 41; The Japan Society of Applied Physics.	
KP	O84	YULDASHEV, S.U., PANIN, G.N., CHOI, S.W., YALISHEV, V.S., NOSOVA, L.A., et al.; Electrical and Optical Properties of ZnO Films Grown on GaAs Substrates; Jpn. J. Appl. Phys; 2003; pp. 3333-3336; Vol. 42; The Japan Society of Applied Physics.	
KP	O85	NONAKA, M., MATSUSHIMA, S., MIZUNO, M., KOBAYASHI, K.; Electronic Structure of Group III Elements Doped into ZnO by Using Molecular Orbital Calculation; Chemistry Letters; 2002; pp. 580-581; The Chemical Society of Japan.	
KP	O86	LIN, G.-R., and WANG, S.-C.; Comparison of High-Resistivity ZnO Films Sputtered on Different Substrates; Japanese Journal of Applied Physics; 2002; pp. L398-L401; Vol. 41; The Japan Society of Applied Physics.	
KP	O87	MANTAS, P.Q., and BAPTISTA, J.L.; The Barrier Height Formation in ZnO Varistors; Journal of the European Ceramic Society; 1995; pp. 605-615; Vol. 15; Elsevier Science Limited, Great Britain.	
KP	O88	ALBERTSSON, J., and ABRAHAMS, S.C.; Atomic Displacement, Anharmonic Thermal Vibration, Expansivity and Pyroelectric Coefficient Thermal Dependences in ZnO; Acta Cryst.; 1989; pp. 34-40; Vol. B45; International Union of Crystallography.	
KP	O89	BLEVINS, J.D.; Wide Bandgap Semiconductor Substrates: Current Status and Future Trends.	
KP	O90	TEKE, A., OZGUR, U., DOGAN, S., GU, X., MORKOC, H., et al.; Excitonic fine structure and recombination dynamics in single-crystalline ZnO; Physical Review B; 2004; pp. 195207-1 - 195207-10; Vol. 70; The American Physical Society.	
KP	O91	LOOK, D.C., REYNOLDS, D.C., LITTON, C.W., JONES, R.L., EASON, D.B., et al.; Characterization of homoepitaxial p-type ZnO grown by molecular beam epitaxy; Applied Physics Letters; 09/02/2002; pp. 1830-1832; Vol. 81, No. 10; American Institute of Physics.	
KP	O92	KIM, K.-K., KIM, H.-S., HWANG, D.-K., LIM, J.-H., and PARK, S.-J.; Realization of p-type ZnO thin films via phosphorus doping and thermal activation of the dopant; Applied Physics Letters; 07/07/2003; pp. 63-65; Vol. 83, No. 1; American Institute of Physics.	
KP	O93	LOOK, D.C.; Emerging Research Fronts Comments by David C. Look; ISI Essential Science Indicators; 04/28/2005.	

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KP	O94	SENGER, R.T., and BAJAI, K.K.; Binding energies of excitons in polar quantum well heterostructures; Physical Review B; 2003; pp. 205314-1 -205314-9; Vol. 68; The American Physical Society.	
KP	O95	SUBRAMANYAM, T.K., NAIDU, B., and UTHANNA, S.; Structure and Optical Properties of dc Reactive Magnetron Sputtered Zinc Oxide Films; Cryst. Res. Technol.; 1999; pp. 981-988; Vol. 34.	
KP	O96	MUTH, J.F., BROWN, J.D., JOHNSON, M.A.L., YU, Z., KOLBAS, R.M., et al.; Absorption coefficient and refractive index of GaN, AlN and AlGaIn alloys; 1999; MRS Internet J. Nitride Semicond.	
KP	O97	YOSHIKAWA, H., and ADACHI, S.; Optical Constants of ZnO; Japanese Journal of Applied Physics; 1997; pp. 6237-6243; Vol. 36.	
KP	O98	SPRINGER, J., PORUBA, A., VANECEK, M., FAY, S., FEITKNECHT, L., et al.; Improved optical model for thin film silicon solar cells; Presented at 17 <sup>th</sup> European Photovoltaic Solar Energy Conference, Munich 2001.	
KP	O99	NEETHLING, J.H., SCRIVEN, G.J., and KREKELS, T.; A TEM investigation of Zn <sub>3</sub> As <sub>2</sub> grown on (001) and (111) InP by MOVPE; Journal of Materials Science; 2001; pp. 3997-4002; Vol. 36; Kluwer Academic Publishers.	
KP	O100	BRINK, D.J., and ENGELBRECHT, A.A.; Ellipsometric investigation of rough zinc arsenide epilayers; Applied Optics; 04/01/2002; pp. 1894-1898; Vol. 41, No. 10; Optical Society of America.	
KP	O101	SCRIVEN, G.J., LEITCH, A.W.R., NEETHLING, J.H., KOZYRKOV, V.V., and WATTERS, V.J.; The growth of Zn <sub>3</sub> As <sub>2</sub> on InP by atmospheric pressure MOVPE; Journal of Crystal Growth; 1997; pp. 813-816; Vol. 170; Elsevier Science B.V.	
KP	O102	ENGELBRECHT, J.A.A., SCRIVEN, G.J., NEETHLING, J.H., and WAGENER, M.C.; Crack formation in Zn <sub>3</sub> As <sub>2</sub> epilayers grown by MOVPE; Journal of Crystal Growth; 2000; pp. 235-244; Vol. 216; Elsevier Science B.V.	
KP	O103	NORMAN, A.G., OLSON, J.M., ROMERO, M.J., and AL-JASSIM, M.M.; Electron Microscopy Studies of Potential 1-eV Bandgap Semiconductor Compounds AnGaAs <sub>2</sub> and Zn <sub>3</sub> As <sub>2</sub> Grown by MOVPE; National Renewable Energy Laboratory.	
KP	O104	MILES, G.C., and WEST, A.R.; Polymorphism and Thermodynamic Stability of Zn <sub>7</sub> As <sub>2</sub> O <sub>12</sub> ; Journal of the American Ceramic Society; 2005; pp. 396-398; Vol. 88.	
KP	O105	TOMLINS, G.W., ROUTBORT, J.L., and MASON, T.O.; Oxygen Diffusion in Single-Crystal Zinc Oxide; Journal of the American Ceramic Society; 1998; pp. 869-876; Vol. 81.	
KP	O106	BOTHA, J.R., SCRIVEN, G.J., ENGELBRECHT, J.A.A., and LEITCH, A.W.R.; Photoluminescence properties of metalorganic vapor phase epitaxial Zn <sub>3</sub> As <sub>2</sub> ; Journal of Applied Physics; 11/15/1999; pp. 5614-5618; Vol. 86, No. 10; American Institute of Physics.	
KP	O107	XIONG, G., WILKINSON, J., MISCHUCK, B., TUZEMEN, S., UCER, K.B., et al.; Control of p- and n-type conductivity in sputter deposition of undoped ZnO; Applied Physics Letters; 02/18/2002; pp. 1195-1197; Vol. 80, No. 7; American Institute of Physics.	
KP	O108	LOOK, D.C., RENLUND, G.M., BURGNER, II, R.H., and SIZELOVE, J.R.; As-doped p-type ZnO produced by an evaporation/sputtering process; Applied Physics Letters; 11/2004; Vol. 85.	
KP	O109	AOKI, T., SHIMIZU, Y., MIYAKE, A., NAKAMURA, A., NAKANISHI, Y., and HATANAKA, Y.; p-Type ZnO Layer Formation by Excimer Laser Doping; phys. stat. sol.; 2002; pp. 911-914; Vol. 229, No. 2; WILEY-VCh Verlag Berlin GmbH, Berlin.	

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KP	O110	LEE, J-M., KIM, K.K., PARK, S-J., and CHOI, W.K.; Low-resistance and non-alloyed ohmic contacts to plasma treated ZnO; Applied Physics Letters; 06/11/2001; pp. 3842-2844; Vol. 78, No. 24; American Institute of Physics.	
KP	O111	YAMAMOTO, T.; Codoping Method to Realize Low-Resistivity p-type ZnO Thin Films; Asia Display/DW '01, Oct. 16-19, 2001, Nagoya, Oct. 18, PH1-2.	
KP	O112	WANG, L.G., and ZUNGER, A.; Cluster-Doping Approach for Wide-Gap Semiconductors: The Case of p-type ZnO; Physical Review Letters; 06/27/2003; pp. 256401-1 - 256401-4; Vol. 90, No. 25; The American Physical Society.	
KP	O113	NAKAHARA, K., TAKASU, H., FONS, P., YAMADA, A., IWATA, K., et al.; Growth of N-doped and Ga+N-codoped ZnO films by radical source molecular beam epitaxy; Journal of Crystal Growth; 2002; pp. 503-508; Vol. 237-239; Elsevier Science B.V.	
KP	O114	RECNIK, A., DANEU, N., WALTHER, T., and MADER, W.; Structure and Chemistry of Basal-Plane Inversion Boundaries in Antimony Oxide-Doped Zinc Oxide; Journal of the American Ceramic Society; 2001; pp. 2357-2668; Vol. 84.	
KP	O115	NONAKA, M., MATSUSHIMA, S., MIZUNO, M., and KOBAYASHI, K.; Electronic Structure of Group III Elements Doped into ZnO by Using Molecular Orbital Calculation; Chemistry Letters; 2002; pp. 580-581; The Chemical Society of Japan.	
KP	O116	RYU, Y.R., KIM, W.J., and WHITE, H.W.; Fabrication of homostructural ZnO p-n junctions; Journal of Crystal Growth; 2000; pp. 419-422; Vol. 219; Elsevier Science B.V.	
KP	O117	LU, J., YE, Z., WANG, L., HUANG, J., and ZHAO, B.; Structural, electrical and optical properties of N-doped ZnO films synthesized by SS-CVD; Materials Science in Semiconductor Processing; 2003; pp. 491-496; Vol. 5; Elsevier Science Ltd.	
KP	O118	ZHENGUO, J., KUN, L., CHENGXING, Y., RUIXIN, F., and ZHIZHEN, Y.; Structural, optical and electrical properties of ZnO thin films prepared by reactive deposition; Journal of Crystal Growth; 2003; pp. 246-251; Vol. 253; Elsevier Science B.V.	
KP	O119	JI, Z., YANG, C., LIU, K., and YE, Z.; Fabrication and characterization of p-type ZnO films by pyrolysis of zinc-acetate—ammonia solution; Journal of Crystal Growth; 2003; pp. 239-242; Vol. 253; Elsevier Science B.V.	
KP	O120	YE, Z-Z., LU, J-G., CHEN, H-H., ZHANG, Y-Z., WANG, L., et al.; Preparation and characteristics of p-type ZnO films by DC reactive magnetron sputtering; Journal of Crystal Growth; 2003; pp. 258-264; Vol. 253; Elsevier Science B.V.	
KP	O121	MINEGISHI, K., KOIWA, Y., KIKUCHI, Y., YANO, K., KASUGA, M., et al.; Growth of p-type Zinc Oxide Films by Chemical Vapor Deposition; Japanese Journal of Applied Physics; 1997; pp. L 1453 - L 1455; Vol. 36.	
KP	O122	JOSEPH, M., TABATA, H., and KAWAI, T.; p-Type Electrical Conduction in ZnO Thin Films by Ga and N Codoping; Japanese Journal of Applied Physics; 1999; pp. L 1205 - L 1207; Vol. 38; Publication Board, Japanese Journal of Applied Physics.	
KP	O123	ASHRAFI, A.B.M.A., SUEMUNE, I., KUMANO, H., and TANAKA, S.; Nitrogen-Doped p-Type ZnO Layers Prepared with H <sub>2</sub> O Vapor-Assisted Metalorganic Molecular-Beam Epitaxy; Japanese Journal of Applied Physics; 2002; pp. L 1281 - L 1284; Vol. 41; The Japan Society of Applied Physics.	
KP	O124	The Promise of Solid State Lighting for General Illumination: Light Emitting Diodes (LEDs) and Organic Light Emitting Diodes (OLEDs); 2001; pp. 1-29; Optoelectronics Industry Development Association, Washington, D.C.	
KP	O125	TALBOT, D.; LEDs vs. the Light Bulb; Technology Review; 05/2003; pp. 30-36.	

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<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (use as many sheets as necessary)		Application Number	10/849,347
		Filing Date	May 19, 2004
		First Named Inventor	Robert H. Burgener, II
		Group Art Unit	2822
		Examiner Name	Kevin M. Picardat
		Attorney Docket Number	3398.2.8
Sheet	9	Of	9

KP	O126	JOHNSON, S.; LEDs—An Overview of the State of the Art in Technology and Application; Light Right 5 Conference, May 27-31, 2002, Nice, France.	
KP	O127	TUZEMEN, S., XIONG, G., WILKINSON, J., MISCHICK, B., UCER, K.B., et al.; Production and properties of p-n junctions in reactively sputtered ZnO; Physica B; 2001; pp. 1197-1200; Vol. 308-310; Elsevier Science B.V.	
KP	O128	GUO, X.-L., CHOI, J.-H., TABATA, H., and KAWAI, T.; Fabrication and Optoelectronic Properties of a Transparent ZnO Homostructural Light-Emitting Diode; Japanese Journal of Applied Physics; 2001; pp. L 177 - L 180; Vol. 40; The Japan Society of Applied Physics.	
KP	O129	XIONG, G., WILKINSON, J., TUZEMEN, S., UCER, K.B., and WILLIAMS, R.T.; Toward a new ultraviolet diode laser: luminescence and p-n junctions in ZnO films.	
KP	O130	HOFFMAN, R.L., NORRIS, B.J., and WAGER, J.F.; ZnO-based transparent thin-film transistors; Applied Physics Letters; 02/03/2003; pp. 733-735; Vol. 82, No. 5; American Institute of Physics.	
KP	O131	BOCKOWSKI, M.; Growth and Doping of GaN and AlN Single Crystals under High Nitrogen Pressure; Cryst. Res. Technol.; 2001; pp. 771-787; Vol. 36; WILEY-VCH Verlag Berlin GmbH, Berlin.	
KP	O132	KATAYAMA-YOSHIDA, H., SATO, K., and YAMAMOTO, T.; Materials design for new functional semiconductors by <i>ab initio</i> electronic structure calculation: Prediction vs. experiment; JSAP International; 07/2006; pp. 20-27; No. 6.	
KP	O133	MUKAI, T., MORITA, D., and NAKAMURA, S.; High-power UV InGaN/AlGaIn double-heterostructure LEDs; Journal of Crystal Growth; 1998; pp. 778-781; Vol. 189/190; Elsevier Science B.V.	
KP	O134	XING, H., GREEN, D.S., MCCARTHY, L., SMORCHKOVA, I.P., CHAVARKAR, P., et al.; Progress in Gallium Nitride-based Bipolar Transistors.	
KP	O135	PIPREK, J., and NAKAMURA, S.; nano-Scale Effects in GaN-based Light-Emitting Diodes; 2004.	
KP	O136	PIPREK, J.; Simulation of GaN-based Light-Emitting Devices; 2004.	
KP	O137	BUNEA, G.E., HERZOG, W.D., UNLU, M.S., GOLDBERG, B.B., and MOLNAR, R.J.; Time-resolved photoluminescence studies of free and donor-bound exciton in GaN grown by hydride vapor phase epitaxy.	
KP	O138	YAO, T.; Plasma-Assisted MBE Growth of ZnO; Molecular Beam Epitaxy; pp. 98-105.	
KP	O139	Chapter 2 Geometric Structure of Metal Oxides; pp. 55-58.	
KP	O140	Chapter 4 Electronic Structure of Non-Transition-Metal-Oxide Surfaces; pp. 143-150.	
KP	O141	IP, K., KHANNA, R., NORTON, D.P., PEARTON, S.J., REN, F., et al.; Thermal Stability of Tungsten-Based Schottky Contacts to N-Type ZnO.	

Examiner Signature	/Kevin Picardat/	Date Considered	06/24/2006
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